

REMARKS

Claims 1-21 are pending in the application.

Claim 15 has been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

The Examiner asserts that the phrase "base film having a laminated structure of an inorganic thin film layer and organic-inorganic coating layer formed by sol-gel method on the base film" is unclear.

Applicants have amended claim 15 to recite, "The gas barrier film according to claim 12, having an inorganic thin film layer and organic-inorganic hybrid coating layer formed by the sol-gel method on the base film." Applicants submit that claim 15 as amended is clear and definite, and respectfully request that the Examiner reconsider and withdraw the rejection.

Claims 1-7 and 9 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Holmes-Farley et al., U.S. Patent No. 5,182,143 ("Holmes-Farley").

Claims 8 and 10-15 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Holmes-Farley, in view of Pinnavaia et al., U.S. Patent No. 6,414,069 ("Pinnavaia").

Claims 16-19 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Holmes-Farley further in view of Stein et al., U.S. Patent No. 6,322,860 ("Stein").

The Examiner asserts that Holmes-Farley teaches barrier (protective) coatings formed by the sol-gel method (col. 1, lines 5-10) containing an inorganic layer coated by an organic-inorganic hybrid layer (col. 5, lines 45-55). The Examiner asserts that Holmes-Farley discloses

that the plastic can be polycarbonate, which is inherently transparent and inherently has a linear thermal expansion coefficient of 40 ppm/°C or lower, and a glass transition temperature of 100 °C or higher. The Examiner acknowledges that Holmes-Farley does not disclose that the polycarbonate is in the form of a film. However, the Examiner asserts that making a polycarbonate film support for the inorganic coating is within the realm of routine experimentation of one of ordinary skill in the art at the time the invention was made.

Applicants traverse the rejection for the following reasons.

At column 8, lines 48-52, Holmes-Farley recites "The substrate that can be treated with the coating solutions can be any substrate that contains active hydrogens on its surface and includes substrates such as metals, metal alloys, ceramics, glasses, plastics and the like." Column 9, lines 4-15 recites "This includes the treatment of plastics, such as nylon and polycarbonate.... Other polymer substrates which can be used include polyamides, polymethacrylates, polyepoxides, and the like." Thus, Holmes-Farley discloses that a wide variety of materials can be used as the substrate of the Holmes-Farley coated article.

Holmes-Farley does not mention the relationship between the glass transition temperatures of the substrates and their respective properties. Holmes-Farley does not mention the relationship between the linear thermal expansion coefficient of the substrates and their respective properties. Accordingly, Applicants submit that no one of ordinary skill in the art reading Holmes-Farley would have been motivated to select a transparent base film having a glass transition temperature of 100°C or higher and a linear thermal expansion coefficient of 40 ppm/°C or lower, before the present invention was made.

The inventors of the claimed invention unexpectedly discovered that transparent base films having a glass transition temperature of 100°C or higher and a linear thermal expansion coefficient of 40 ppm/°C or lower exhibit excellent gas barrier properties and can provide a liquid crystal display device with high definition and superior durability. Applicants direct the Examiner's attention to the experimental data disclosed in the present specification. Please refer to Test Examples 1 and 2. Each sample shown in Table 1 has a different support. All the samples have the same laminated structure of the inorganic coating layer and the organic-inorganic hybrid coating layer on the supports. The results of Test Examples 1 and 2 indicate that only the claimed base films exhibit excellent gas barrier properties and can provide a liquid crystal display device with high definition and superior durability. Since Holmes-Farley is silent concerning supports having excellent gas barrier properties and being suitable for production of a preferable liquid crystal display device, no one skilled in the art would have made the claimed invention and predicted its advantageous effects. For the above reasons, claim 1 is not obvious over Holmes-Farley.

Further, because claims 2-19 depending from independent claim 1 restrict an element of claim 1 or utilize the film of claim 1, claims 2-19 are also patentable over Holmes-Farley.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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